WHAT IS CLAIMED IS

1. A method for the sizing of a deterministic type of packet-switching transmission network serving items of equipment to be interconnected and comprising interconnection nodes connected to one another and to the items of equipment by physical connecting links, this method consisting in setting up a list of the information flows to be conveyed between the different pieces of equipment connected by the network, proposing a network topology assumed to be adapted to the geographical layout of the items of equipment to be connected by the network and to the size of the information flows to be exchanged between the items of equipment, said network topology consisting of the definition of the virtual paths for the transportation of the different information flows and of a meshing of interconnection nodes connected to one another and to the items of equipment by physical connection links that carry these virtual paths, estimating, at each connection node, the maximum delays introduced into the transmissions of the packets by jitter phenomena prompted by themselves and by the connection nodes already crossed by the packets, ascertaining that these maximum delays are compatible with the delays imposed and revising the topology of the network so long as this compatibility is not obtained,

wherein, in a network where the packets all have the same speed of transportation V on the physical connection links connecting the interconnection nodes to each other and to the items of equipment, the estimation of the maximum delay times introduced by the jitter phenomenon entails the determining of the jitter component $\Delta J_{K,j}$ added by an interconnection node K at one of its output ports S_j linked, by means of a buffer memory receiving a queue and a multiplexing device, with N of its input ports E_i, this determination of the component of the jitter $\Delta J_{K,j}$ being done when each packet of a virtual path VC_i entering the buffer memory by an input port E_i has, between an aggregate of packets and the following packet or aggregate of packets, a minimum time interval sufficient to empty the buffer memory to prevent its overflow at the reception of the following packet or aggregate of packets, by the implementation of the following relationship:

$$\Delta J_{K_j} = \frac{Q}{V} = \frac{\sum_{l=1}^{N} B_l - Sup\{B_l\}}{V}$$

Q being the maximum quantity of bits of the queue estimated from the relationship :

$$Q = \sum_{l=1}^{N} B_l - Sup\{B_l$$

N being the number of packet flows liable to converge on the output port considered, namely the number of flows crossing the interconnection node and converging on the output port S_j considered,

B_i being the maximum size in bits of an aggregate of packets likely to reach a VC_i by an input port E_i, it being possible to express this maximum size also by the relationship:

$$B_l = M_l \times q_{max}$$

M_i being the maximum number of packets in an aggregate of packets capable of arriving at the virtual path VC_l through an input port E_l and q_{max} being the maximum number of bits of a packet.

2. A method according to claim 1, wherein the maximum size B_i in bits of an aggregate of packets likely to arrive at a virtual path VC_i by an input port E_i of an interconnection node of the network is taken to be equal to the size of the greatest aggregate of packets $B_{VC_{l,i,k}}$ that may arise on this virtual path VC_i that takes the input port E_i of the connection node K considered:

$$B_l = Sup\{B_{VC_{l,i,k}}$$

the size of the biggest aggregate of packets $B_{VC_{l,i,k}}$ that may arise on a virtual path VC_i that takes the input port E_i of the connection node K considered being obtained from the system of relationships:

$$\begin{cases} B_{VC_{l,i,k}} = 1 + \text{integer part}\left(\dfrac{\sum_{k=1}^{K-1} \Delta J_{l,k}}{Ti}\right) \times q_{max} & for \sum_{k=1}^{K-1} \Delta J_{l,k} \geq Ti\ et \sum_{k=1}^{K-1} \Delta J_{l,k} < Ti - \dfrac{q_{max}}{V} \\ B_{VC_{l,i,k}} = 2 & for\, Ti - \dfrac{q_{max}}{V} \leq \sum_{k=1}^{K-1} \Delta J_{l,k} < Ti \end{cases}$$

K herein being the number of connection nodes crossed by a virtual path considered and the index k identifying the connection nodes crossed by a virtual path considered in the order in which they are crossed by the packets, the different jitter components $\Delta J_{l,k}$ being determined from one to the next in travelling through the different virtual paths from their original points to their end points.

3. A method according to claim 2 wherein, once the jitter components added by the different interconnection nodes at their different output ports have been determined, it is verified, on each virtual path VC_i, that the minimum time intervals $\Delta T_{l,K}$ between the biggest aggregate of packets and the next packet that reaches the different interconnection nodes encountered at the earliest, obtained by the relationship:

$$\Delta T_{l,K} = Ti - \mathrm{Remainder}\left(\frac{\sum_{k=1}^{K} \Delta J_{l,k}}{Ti}\right) - \frac{B_{VC_{l,k,j}}}{V}$$

are sufficient to prevent any problem of congestion of the queues caused by bursts excessively close to each other, in finding out whether they meet the inequality:

$$\Delta T \geq (M-1)\frac{q_{max}}{V}$$

M being a positive integer at most equal to the number of virtual paths taking the output port of the interconnection node considered, chosen as a function of the degree of security required for the transmission,

4. A method according to claim 2 wherein, once the jitter components added by the different interconnection nodes at their different output ports have been determined, it is verified, on each virtual path VC_i, that the minimum time intervals $\Delta T_{l,K}$ between its biggest aggregate of packets and the next packet that reaches the different interconnection nodes encountered at the earliest, obtained by the relationship:

$$\Delta T_{l,K} = Ti - \mathrm{Remainder}\left(\frac{\sum_{k=1}^{K} \Delta J_{l,k}}{Ti}\right) - \frac{B_{VC_{l,k,j}}}{V}$$

are sufficient to prevent any problem of congestion of the queues caused by bursts excessively close to each other, in finding out whether they meet the inequality:

$$\Delta T_k \geq (M-1)\frac{q_{max}}{V} + \frac{\underset{1 \leq l \leq N}{Sup}\{\text{Max aggregate size}_{VC_l}\}}{V} - \frac{\text{Max aggregate size}_{VC_k}}{V}$$

for a VC_k.

M being a positive integer at most equal to the number of virtual paths taking the output port of the interconnection node considered, chosen as a function of the degree of security required for the transmission,